Mirant Potomac River, LLC
Alexandria, Virginia

ENSR INTERNATIONAL

Protocol For Modeling the Effects of Downwash from Mirant's Potomac River Power Plant

ENSR Corporation
October 2004
Document Number 10350-002-400

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1.0 INTRODUCTION

1.1 Project Overview

Mirant Potomac River, LLC (Mirant) is submitting this modeling protocol pursuant to an Order By Consent issued by the Commonwealth of Virginia, State Air Pollution Control Board. The effective date of the Order is September 23, 2004. According to the Order, Mirant must submit this protocol within 21 days of the effective date of the Order, or by October 14, 2004. The protocol must describe Mirant's proposed refined modeling analysis to assess the effect of aerodynamic downwash from the facility on ambient concentrations of sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO) and particulate matter with an aerodynamic diameter less than or equal to 10 micrometers (PM_{10}). The analysis must compare predicted concentrations of these pollutants in the area immediately surrounding the facility to their respective National Ambient Air Quality Standards (NAAQS).

In addition, Mirant must perform a refined modeling analysis to assess the effect of downwash from the facility on ambient concentrations of mercury for comparison to the applicable Standards of Performance for Toxic Pollutants set forth in VAC 5-60-200, et. Seq., in the area immediately surrounding the facility.

The Order is included in Appendix A of this protocol.

1.2 Protocol Outline

This document is a modeling protocol for the use of EPA's proposed Guideline model, AERMOD with PRIME (hereafter called AERMOD), to assess downwash from Mirant's Potomac River power plant. AERMOD is technically superior to the downwash algorithm in EPA's current Guideline model, ISCST3.

Section 2 of this protocol describes the facility and lists the permitted or maximum emission rates. Section 3 discusses the proposed approach for conducting the air quality dispersion modeling analysis including the dispersion model selection criteria, the Good Engineering Practice (GEP) stack height and downwash modeling inputs, model receptor locations and proposed meteorological database. Section 4 describes representative ambient background data. Section 5 describes how results will be documented. References are listed in Section 6.

1.3 Basis For Ambient Compliance

Modeled concentrations of criteria pollutants will be added to a monitored background concentration and the total will be compared to the NAAQS shown in Table 1-1. The monitored background concentration represents the contribution to total air quality from all other sources in the area. Modeled

concentrations of mercury will be compared to the mercury limits contained in the Standards of Performance for Toxic Pollutants.

The NAAQS have been developed for various durations of exposure. The short-term (24-hours or less) NAAQS for SO_2 and CO refer to exposure levels not to be exceeded more than once per year. Long-term NAAQS for SO_2 and NO_2 refer to limits that cannot be exceeded for annual exposure. Compliance with the PM_{10} 24-hour and annual standards are statistical, not deterministic. The standards are attained when the expected number of exceedances each year is less than or equal to one. When modeling with a five-year meteorological data set, compliance with the 24-hour standard is demonstrated when the 6th highest 24-hour concentrations at each receptor, based on the 5 year data set, is predicted to be below the standard. Compliance with the annual standard is demonstrated when the arithmetic average of the annual arithmetic average from 3 successive years is predicted to be below the standard at each receptor.

The limits for mercury in the Standards of Performance for Toxic Pollutants are not to be exceeded and have been established for the annual and 1-hour averaging periods for mercury vapor. The TLV-TWA 8-hour limit for mercury vapor is equal to 0.025 mg/m^3 (25 µg/m^3). The Virginia Air Code 9VAC5-60-230 states that the annual ambient concentration (from the facility) should not exceed 1/500 of the TLV-TWA (or 0.05 µg/m^3) and the 1-hour concentration from the facility should not exceed 1/20 of the TLV-TWA (1.25 µg/m^3)

Table 1-1 National Ambient Air Quality Standards and Standards of Performance for Toxic Pollutants

Pollutant	Averaging Period	Primary NAAQS (µg/m^3)	Secondary NAAQS (µg/m^3)
NO_2	Annual[(1)]	100	100
SO_2	Annual[(1)]	80	None
	24-hour[(2)]	365	None
	3-hour[(2)]	None	1,300
PM_{10}	Annual[(4)]	50	50
	24-hour[(3,5)]	150	150
CO	8-hour[(2)]	10,305	10,305
	1-hour[(2)]	40,075	40,075

(1) Not to be exceeded
(2) Not to be exceeded more than once per year
(3) Not to be exceeded more than an average of one day per year over three years
(4) Not to be exceeded by the arithmetic average of the annual arithmetic averages from 3 successive years
(5) Compliance with the 24-hour standard is demonstrated when the 6th highest 24-hour concentration at each receptor, based on 5 years of modeling, is predicted below the standard Source 40 CFR 50

2.0 PROJECT DESCRIPTION

The Potomac River power plant consists of five bituminous coal-fired electric utility steam generating units. Units #1 and #2 each generate 88 megawatts of electricity. Units #3, #4 and #5 each generate 102 megawatts. The facility is located in Alexandria, VA, approximately 1 mile south of Reagan National Airport. Figure 2-1 depicts the site location.

There are five boiler stacks at the power plant. Flue gases from each boiler exit into the atmosphere through its own stack. Each boiler unit is equipped with hot and cold side electrostatic precipitators for particulate control. Each unit is permitted to emit SO_2 at the rate of 1.52 lb/MMBtu based on a 24-hour average.

Table 2-1 presents stack parameters and permitted emissions rates that will be used in the dispersion modeling. The facility does not have limits on CO and mercury emissions. Maximum CO emissions were determined from the facility's continuous emission monitoring (CEMs) system. The maximum 1- and 8-hour CO emission rates for modeling are based on a maximum measured value of 650 parts per million (volume, dry basis). The maximum short-term and annual average mercury emission rate will be calculated using an emission factor of 2.53E-06 lb/MMBtu. This is the emission factor reported by Mirant Potomac in their annual Toxic Release Inventory (TRI) reporting. Maximum short term mercury emissions from each unit will be calculated by multiplying this emission factor by the maximum capacity in MMBtu/hr of each unit. The result is a lb/hr emission rate for modeling. The annual mercury emissions will be calculated by multiplying the 2.53E-06 lb/MMBtu emission factor by the most recent two year average of the power plant's total annual heat input in MMBtu/yr. The result is a lb/yr emission rate. This emission rate will be divided by 8,760 hours in a year to arrive at a lb/hr emission rate for modeling. Annualized lb/hr mercury emissions will be apportioned equally to each unit.

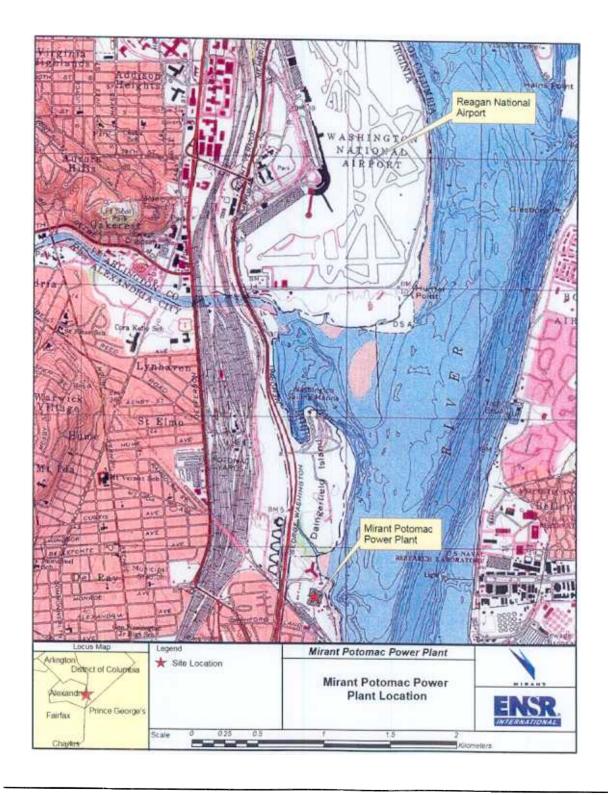**Figure 2-1 Mirant Potomac Power Plant Location**

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October 13. 2004

Table 2-1 Stacks Emissions and Model Input Data

Mirant Potomac River Permitted Emission Data (g/sec)					
Stack	SO$_2$ [1]	NOx	TSP	CO (Actual Emissions) [2]	Mercury (Actual Emissions)
1	185.85	94.12	14.62	88.07	2.53 E-06 lb/MMBtu
2	185.85	94.12	14.62	72.61	2.53E-06 lb/MMBtu
3	183.96	104.10	14.49	74.06	2.53E-06 lb/MMBtu
4	183.96	104.10	14.49	79.83	2.53E-06 lb/MMBtu
5	183.96	104.10	14.49	81.27	2.53E-06 lb/MMBtu

(1) Based on 1.52 lb SO$_2$/MMBtu

(2) Emissions were calculated from the highest measurement of 650 ppmvd.

Stack	UTM-X [3] (m)	UTM-Y [3] (m)	Base Elevation (m)	Height (m)	Diameter (m)	Temp (°K)	Velocity (m/sec)
1	322803.56	4298573.90	10.4	49.1	2.6	444.3	35.7
2	322807.30	4298597.60	10.4	49.1	2.6	455.4	30.2
3	322811.09	4298620.99	10.4	49.1	2.4	405.4	30.8
4	322814.70	4298644.32	10.4	49.1	2.4	405.4	33.2
5	322818.96	4298668.01	10.4	49.1	2.4	405.4	33.8

(3) Datum: NAD27, UTM Zone 18

3.0 DISPERSION MODELING ANALYSIS

3.1   Model Selection

In 1991, the USEPA, in conjunction with the American Meteorological Society (AMS), formed the AMS/USEPA Regulatory Model Improvement Committee (AERMIC). AERMIC's charter was to build upon earlier modeling developments to provide a state-of-the-art dispersion model. The resulting model was AERMOD with PRIME algorithm (hereafter called AERMOD). The PRIME downwash algorithm is technically superior to the downwash algorithm in ISCST3 because the former was developed based on extensive wind tunnel testing that was not available to the developers of ISCST3. The PRIME algorithm allows the model to calculate impacts in the cavity region immediately downwind of a downwashing stack.

Based upon the scientific formulation of AERMOD and its evaluation performance, USEPA is proposing that AERMOD replaces ISCST3 and CTDMPLUS as refined dispersion modeling techniques for simple and complex terrain for receptors within 50 km of a modeled source. Since AERMOD does not have limitations in modeling either simple or complex terrain, USEPA is proposing it as a refined technique for all terrain types.

For this project, given that USEPA has proposed AERMOD as a guideline model to replace ISCST3 and CTDMPLUS, MIRANT proposes to use AERMOD (Version 02222). This model and version is expected to be promulgated as a Guideline model in the near future.

AERMOD represents an advance in the formulation of a steady-state, Gaussian plume model. It is apparent that AERMOD has an advantage over the guideline model ISCST3 when the various scientific components are compared (Paine et al., 1998). Therefore, AERMOD would be expected to perform at least as well as or better than the existing modeling techniques, such as ISCST3.

3.2   Good Engineering Practice Stack Height Analysis

A Good Engineering Practice (GEP) stack height analysis was performed based on the current facility design to determine the potential for building-induced aerodynamic downwash for all five boiler stacks. The analysis procedures described in EPA's Guidelines for Determination of Good Engineering Practice Stack Height (EPA, 1985), Stack Height Regulations (40 CFR 51), and current Model Clearinghouse guidance were used. A GEP stack height is defined as the greater of 65 meters (213 feet), measured from the ground elevation of the stack, or the formula height (H_g), as determined from the following equation:

$$H_g = H + 1.5 \, L$$

where

H is the height of the nearby structure which maximizes H_g, and

L is the lesser dimension (height or projected width) of the building.

The GEP analysis was conducted using Lakes Environmental's BPIP View (v 4.8.5) software. The controlling structure for determining the GEP formula height for the five power boiler stacks is the Recovery Boiler Building with a building height of 35.3 meters (see Figure 3-1). The figure shows the on-site structures that could affect stack downwash. Table 3-1 presents the dimensions of these structures from the BPIP output. The GEP height for the five boiler stacks is 88.25 meters. Since the GEP height exceeds the 49.1 meter stack heights, BPIP generated wind direction-specific structure dimensions will be input to AERMOD to simulate downwash from each stack. These dimensions are included in Appendix B.

Table 3-1 Summary of GEP Analysis (Units in Meters)

Structure	Height	Length	Width	MPW[1]	GEP Formula Height	5L[2]
Boiler Building	35.3	158.0	64.0	170.5	88.3	176.5
Turbine Building	23.0	156.0	26.0	158.2	57.5	115.0
ESP 1-4	35.3	94.5	25.0	97.8	88.3	176.5
ESP 5	35.3	26.0	24.0	35.4	88.3	176.5
Silo 1	33.6	N/A	13.7	13.7	54.2	68.5
Silo 2	33.6	N/A	13.7	13.7	54.2	68.5
Silo 3	31.0	N/A	9.4	9.4	45.1	47.0

(1) Maximum projected width.
(2) 5 times the lesser of the MPW or height is the maximum influence region.

Table 3-2 Summary of GEP Analysis (Units in Meters) (cont.)

Structure	Distance to the Stacks					Stacks Potentially Affected By Downwash				
	1	2	3	4	5	1	2	3	4	5
Boiler Building	0.0	0.0		0.0	0.0	yes	yes	yes	yes	yes
Turbine Building	55.0	55.0	55.0	55.0	55.0	yes	yes	yes	yes	yes
ESP 1-4	9.6	9.6	9.6	9.6	15.0	yes	yes	yes	yes	yes
ESP 5	111.0	87.3	63.0	40.0	15.7	yes	yes	yes	yes	yes
Silo 1	72.0	96.0	119.0	143.0	167.0	no	no	no	no	no
Silo 2	69.0	92.0	114.0	158.0	161.5	no	no	no	no	no
Silo 3	37.8	62.0	86.0	110.0	134.0	yes	no	no	no	no

3.3   Building Cavity Analysis

The PRIME downwash algorithm within AERMOD calculates pollutant concentrations within the cavity region. Therefore, no additional analysis (e.g., SCREEN3) is necessary.

3.4   Terrain and Receptor Data

The downwash analysis will be conducted for the area immediately surrounding the facility. Mirant defines "immediate area" to be where downwash is occurring. The maximum extent of downwash in AERMOD is equal to a distance of 15 x L, where "L" is as the lesser dimension of the height or maximum projected width of the controlling structure. For this facility, "L" is the height of the boiler structure (35.3 meters) and 15 x L = 530 meters. Beyond this distance, effects of downwash cannot be distinguished from ambient impacts of the released effluent that are caused by atmospheric turbulence alone. Mirant proposes to model facility-related impacts within a grid that extends out 1 km from the center of the boiler building. All downwash-related impacts will be captured within this grid.

The receptor grid to be used in AERMOD will be chosen from the USGS maps in accordance with standard EPA procedures. Fenceline receptors will be established at 50 m spacing along the property boundary, surrounded by polar receptors placed along 10 degree radials out to 1 km. Polar receptors will be spaced 100 meters apart. Figure 3-2 shows the receptor grid

AERMOD requires each receptor to identify a "height scale" which is defined as the height of a nearby controlling hill. The controlling hill heights and receptor elevations will be generated from USGS digital elevation model (DEM) files. Receptor coordinates and elevations are listed in Appendix C.

3.5   Meteorological Data

For refined dispersion modeling, one year of on-site or five years of off-site representative meteorological data are required. For this application, five years of meteorological data will be used for input to AERMET, the meteorological preprocessor for AERMOD. Hourly surface meteorological data from the NWS Station at Reagan National Airport, Virginia will be used in addition to the upper air meteorological data from the NWS Met Station at Sterling, Virginia to develop the 5-year (1998-2002) AERMET data files (see Figure 3-3).

Meteorological data required for the AERMOD model partly consist of hourly values of wind speed, wind direction, and ambient temperature. Since the AERMOD dispersion algorithms are based on atmospheric boundary layer dispersion theory, additional boundary layer parameters are required. These parameters include sensible heat flux, surface friction velocity, convective velocity scale, vertical potential temperature gradient, convective and mechanical mixing heights, Monin-Obukhov length, surface roughness length, Bowen ratio, and albedo. A portion of these boundary layer parameters, as well as hourly wind and temperature profiles of the atmosphere, are estimated using surface parameters and upper air soundings. The base elevation of the primary surface station also is required by AERMOD. The base elevation of the Reagan National Airport will be used in AERMOD.

The AERMET meteorological pre-processor (version 02222) will be used to process data required for AERMOD. Site characteristics such as surface roughness, albedo, and Bowen ratio will be included in the input control file to AERMET.

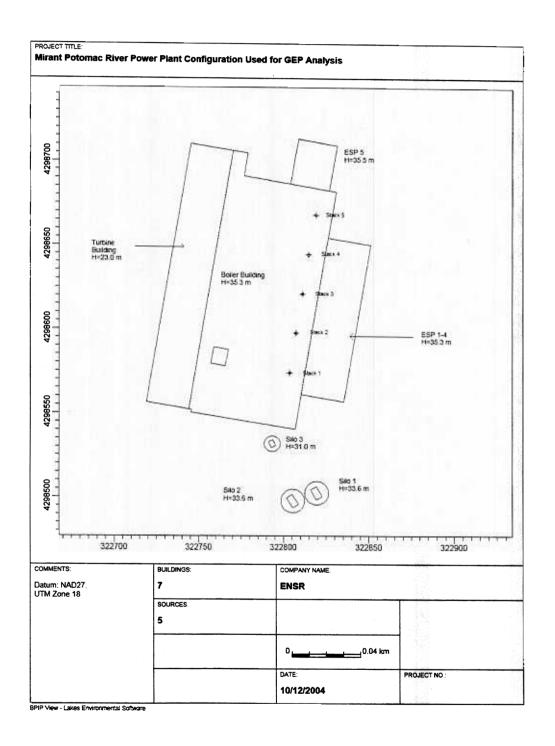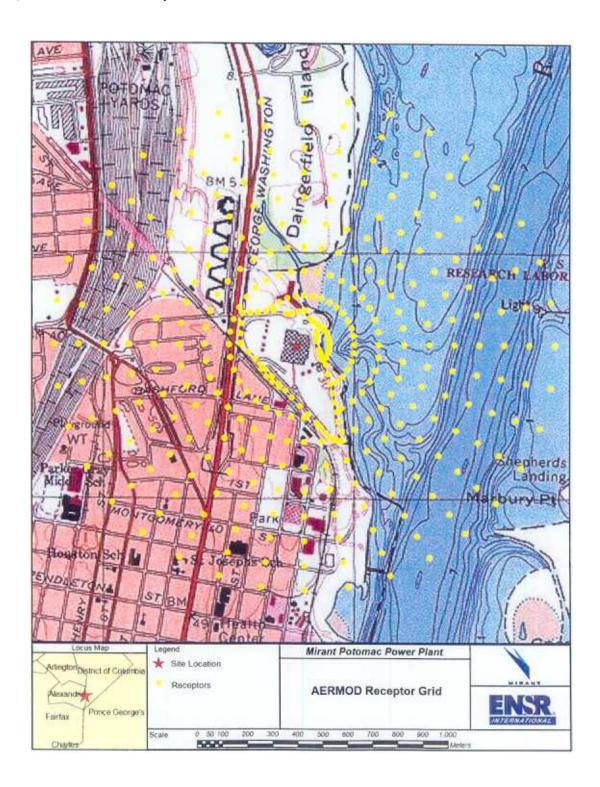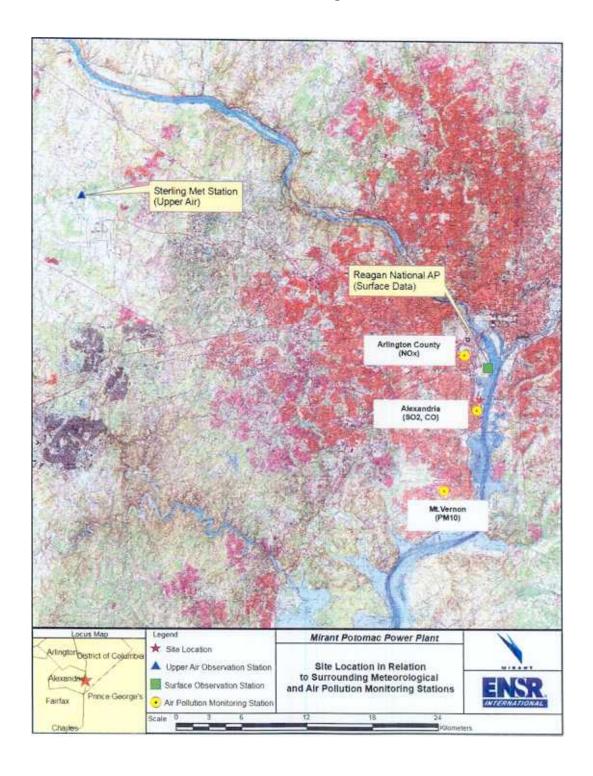**Figure 3-1 Mirant Potomac Power Plant Configuration Used for GEP Analysis**

PROJECT TITLE:
Mirant Potomac River Power Plant Configuration Used for GEP Analysis

COMMENTS:	BUILDINGS:	COMPANY NAME:	
Datum: NAD27, UTM Zone 18	**7**	**ENSR**	
	SOURCES		
	5		
		0 ⊢━━━━━┤ 0.04 km	
		DATE:	PROJECT NO.:
		10/12/2004	

BPIP View - Lakes Environmental Software

Figure 3-2 AERMOD Receptor Grid

Mirant Potomac Power Plant

AERMOD Receptor Grid

Figure 3-3 Meteorological and Air Pollution Monitoring Stations

3.5.1 Site Characteristics

It will be assumed that the site characteristics of the area surrounding the power plant and Reagan National Airport are similar. A comparison of topographic maps and aerial photographs for the power plant and the airport show mostly urban and water land use types. Therefore, a 3-kilometer radial area surrounding the meteorological tower was divided into 4 directional sectors for specifying site characteristics (see Figure 3-4 and Figure 3-5).

Land-Use Type	Fractional Land-Use			
	Sector 1 (60°-150°)	Sector 2 (150°-200°)	Sector 3 (200°-350°)	Sector 4 (350°-60°)
Water	0.2	0.75	0.1	0.6
Coniferous	0.1	0.05	0.05	0
Grassland	0.4	0.1	0.3	0.3
Urban	0.3	0.1	0.55	0.1
Total % Land Use	1	1	1	1

The seasonal values for each land classification that are needed based on the above sectors are provided in the AERMET user's guide (USEPA 1998) and summarized in Tables 3-2 through 3-4. Monthly weighted averages of albedo, surface roughness, and Bowen ratio based on the land classification for the above sectors will be calculated for five meteorological years. The Bowen ratio will have different annual values because of its dependency on moisture conditions. Each month will be classified as average, dry, or wet, based on monthly average precipitation data from Reagan National Airport compared to a 30 year average for each month. The calculated values then will be used for that month in determining the weighted average for the sector.

Table 3-3 Seasonal Albedo Values found in the AERMET User's Guide

Land-Use Type	Spring	Summer	Autumn	Winter
Water	0.12	0.10	0.14	0.20
Deciduous	0.12	0.12	0.12	0.50
Coniferous	0.12	0.12	0.12	0.35
Swamp	0.12	0.14	0.16	0.30
Cultivated Land	0.14	0.20	0.18	0.60
Grassland	0.18	0.18	0.20	0.60
Urban	0.14	0.16	0.18	0.35
Desert Shrubland	0.30	0.28	0.28	0.45

Table 3-4 Seasonal Surface Roughness Values found in the AERMET User's Guide

Land-Use Type	Spring	Summer	Autumn	Winter
Water	0.0001	0.0001	0.0001	0.0001
	1.00	1.30	0.80	0.50
	1.30	1.30	1.30	1.30
	0.20	0.20	0.20	0.05
	0.03	0.20	0.05	0.01
	0.05	0.10	0.01	0.001
	1.00	1.00	1.00	1.00
	0.30	0.30	0.30	0.15

Table 3-5 Seasonal Bowen Ratio Values found in the AERMET User's Guide

Land-Use Type	Average				Dry				Wet			
	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn	Winter	Spring	Summer	Autumn	Winter
Water	0.1	0.1	0.1	1.5	0.1	0.1	0.1	2.0	0.1	0.1	0.1	0.3
Deciduous	0.7	0.3	1.0	1.5	1.5	0.6	2.0	2.0	0.3	0.2	0.4	0.5
Coniferous	0.7	0.3	0.8	1.5	1.5	0.6	1.5	2.0	0.3	0.2	0.3	0.3
Swamp	0.1	0.1	0.1	1.5	0.2	0.2	0.2	2.0	0.1	0.1	0.1	0.5
Cultivated Land	0.3	0.5	0.7	1.5	1.0	1.5	2.0	2.0	0.2	0.3	0.4	0.5
Grassland	0.4	0.8	1.0	1.5	1.0	2.0	2.0	2.0	0.3	0.4	0.5	0.5
Urban	1.0	2.0	2.0	1.5	2.0	4.0	4.0	2.0	0.5	1.0	1.0	0.5
Desert Shrubland	3.0	4.0	6.0	6.0	5.0	6.0	10.0	10.0	1.0	5.0	2.0	2.0

Figure 3-4 Sectors Indicating Land Use at the Reagan National AP

Mirant Potomac Power Plant

Sectors Indicating Land Use at the Reagan National Airport

Legend
- ⭐ Site Location
- ⭐ Reagan National Airport
- ◯ 3-km Radius Ring

Figure 3-5 Aerial Photo of the Region Surrounding Reagan National AP
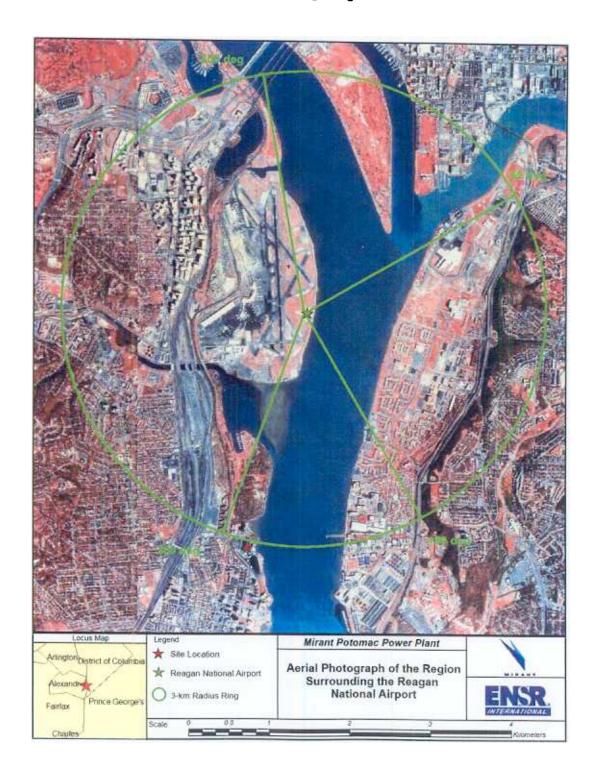

Mirant Potomac Power Plant

Aerial Photograph of the Region Surrounding the Reagan National Airport

4.0 BACKGROUND AIR QUALITY

Ambient air quality data are used to represent the contribution to total ambient air pollutant concentrations from non-modeled sources. Table 4-1 shows locations and the measured concentrations over the past three years (2001-2003) of the closest air pollution monitors to the Mirant power plant. Background concentrations of SO_2 and CO were based on the Alexandria City, VA air quality monitoring station data located 1 km to the SW of the power plant. The Alexandria site is classified as residential land use and is in an urban area.

Background air quality concentrations of NO_2 were based on the Arlington County monitoring data. The monitoring station is located 4.4 km to the NW of the Mirant Potomac facility. The Arlington site is classified as commercial land use and located in an urban area.

Ambient background air quality concentrations of PM_{10} were based on the Mount Vernon, VA monitoring data. The monitoring station is located 9 km to the SSW of the Mirant Potomac facility. The Mount Vernon site is classified as residential land use and located in a suburban area.

Table 4-1 Summary of the Background Air Quality Data

Pollutant	Monitor Site	Averaging Period	Measured Concentrations ($\mu g/m^3$)*			NAAQS ($\mu g/m^3$)
			2001	2002	2003	
SO_2	517 N Saint Asaph St, Alexandria City, VA	3-hour	207.0	238.4*	186.0	1300
		24-hour	57.6	55.0	60.3*	365
		Annual	15.7*	15.7*	15.7*	80
PM_{10}	2675 Sherwood Hall Lane, Mt.Vernon, VA	24-hour	35	40	42*	150
		Annual	18	19	21*	50
NO_2	S 18th And Hayes St, Arlington County, VA	Annual	41.4	41.4	48.9*	100
CO	517 N Saint Asaph St, Alexandria City, VA	1-hour	4945.0*	4600.0	4025.0	40,075
		8-Hour	2760.0	2760.0	3220.0*	10,305

* short-term and annual values are highest in each year
Note: Short-term concentrations reported as highest of the second highest and annual concentrations reported as mean

5.0 DOCUMENTATION OF RESULTS

The report that documents the air quality impact analysis will describe the input data, the modeling procedures, and the results in tabular and graphical form. Much of the information regarding locations, plot plans, etc., associated with the Project that is included in this modeling protocol will be included in the air quality impact analysis report.

The document will be presented in loose-leaf format in a 3-ring binder so that additions or revisions can easily be made. Any process information deemed to be confidential by Mirant Corporation will be so noted.

Three copies of the final air quality modeling report will be submitted to the Virginia DEQ Central Office. Additional copies for distribution to USEPA Region III will be provided, if necessary.

The computer files associated with the air quality analysis will be submitted on a single CD-ROM. All meteorological and monitoring data will be presented so that a reviewer can completely reconstruct the entire modeling demonstration on an IBM-compatible PC. Descriptions of files on the CD will be included in the computer documentation, and the use of binary files will be avoided to promote portability of the files to other computer systems.

6.0 REFERENCES

EPA 1985. *Guideline for the Determination of Good Engineering Practice Stack Height (Technical Support Document for the Stack Height Regulations) - Revised.* EPA-450/4-80-023R, U.S. Environmental Protection Agency, Research Triangle Park, NC 27711.

EPA 1990. *New Source Review Workshop Manual.* Draft October 1990. U.S. Environmental Protection Agency, Research Triangle Park, NC 27711.

EPA 1997. *Guideline on Air Quality Models (Revised).* EPA-450/2-78-027R, U. S. Environmental Protection Agency, Research Triangle Park, NC 27711.

EPA 1998. *Revised Draft User's Guide for the AERMOD Meteorological Preprocessor (AERMET).* U. S. Environmental Protection Agency, Research Triangle Park, NC 27711.

EPA, 2004. Control of Mercury Emissions from Coal-Fired Electric Utility Boilers. Air Office of Research and Development, February 27. EPA's Technology Transfer Network Air Toxics Website/Electric Utility Steam Generating Units NESHAPS

Paine, R.J., R.F. Lee, R. Brode, R.B. Wilson, A.J. Cimorelli, S.G. Perry, J.C. Weil, A. Venkatram and W. Peters, 1998. Model Evaluation results for AERMOD. EPA website www.epa.gov/scram001

Standards of Performance for Toxic Pollutants 9VAC5-60-230
http://leg1.state.va.us/cgi-bin/legp504.exe?000+reg+9VAC5-60-230

APPENDIX

A

APPENDIX A

CONSENT ORDER REGARDING A DOWNWASH STUDY

MIRANT POTOMAC RIVER, LLC

COMMONWEALTH OF VIRGINIA
STATE AIR POLLUTION CONTROL BOARD

ORDER BY CONSENT

ISSUED TO

MIRANT POTOMAC RIVER, LLC
Registration No. 70228

SECTION A: Purpose

This is a Consent Order issued under the authority of Va. Code § § 10.1-1307D and 10.1-1307.1, between the Board and Mirant Potomac River, LLC for the purpose of ensuring compliance with ambient air quality standards incorporated at 9 VAC Chapter 30 and Va. Code § 10.1-1307.3(3) requiring certain emissions modeling and analysis related to the Potomac River Power Station located in Alexandria, Virginia.

SECTION B: Definitions

Unless the context clearly indicates otherwise, the following words and terms have the meanings assigned to them below:

1. "Va. Code" means the Code of Virginia (1950), as amended.

2. "Board" means the State Air Pollution Control Board, a permanent collegial body of the Commonwealth of Virginia as described in Va. Code §§ 10.1-1301 and 10.1-1184.

3. "Department" or "DEQ" means the Department of Environmental Quality, an agency of the Commonwealth of Virginia as described in Va. Code § 10.1-1183.

4. "Director" means the Director of the Department of Environmental Quality.

5.   "Order" means this document, also known as a Consent Order.

6.   "Mirant," means Mirant Potomac River, LLC, a limited liability company qualified to do business in Virginia. Mirant Potomac River, LLC is owned Mirant Corporation and operated by Mirant Mid-Atlantic, LLC.

7.   "Facility" means the Potomac River Generating Station owned and operated by Mirant located at 1400 North Royal Street, Alexandria, Virginia, 22314. The facility is a five unit, 488 MW coal-fired electric generating plant.

8.   "NVRO" means the Northern Virginia Regional Office of DEQ, located in Woodbridge, Virginia.

9.   "The Permit" means the Stationary Source Permit to Operate issued by DEQ to the facility on September 18, 2000, pursuant to 9 VAC 5-80-800, *et seq*.

10.   "Marina Towers" means a multiple unit residential condominium building located at 501 Slaters Lane, Alexandria, Virginia, in close proximity to the facility.

11.   "Downwash" means the effect that occurs when aerodynamic turbulence induced by nearby structures causes pollutants from an elevated source (such a smokestack) to be mixed rapidly toward the ground resulting in higher ground-level concentrations of pollutants.

12.   "NAAQS" means the primary national ambient air quality standards established by the U.S. Environmental Protection Agency for certain pollutants, including sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), ozone, and particulate matter (PM), pursuant to § 109 of the federal Clean Air Act, 42 USC § 7409, set forth at 40 CFR Part 50 and incorporated at 9 VAC Chapter 30. NAAQS are established at concentrations necessary to protect public health with an adequate margin of safety.

13.   "NOx" means oxides of nitrogen, which is a pollutant resulting from the combustion of fossil fuels and a precursor to the formation of ozone.

14.   "PM_{10}" means particulate matter with an aerodynamic diameter less than or equal to 10 micrometers and is a pollutant resulting from, among other things, the combustion of fossil fuels.

SECTION C: Findings of Fact and Conclusions of Law

1.   In order to ensure compliance with the Northern Virginia area's National Ambient Air Quality Standard (NAAQS) for ozone, the Department is in the process of revising the facility's Stationary Source Permit to Operate for the purpose of clarifying the facility's ozone season

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(May 1 through September 30) emission requirements for NOx. A public hearing on the proposed permit revision was held in Alexandria, Virginia, on the evening of April 12, 2004.

2. Among the comments offered at the public hearing by Alexandria residents was that DEQ should require Mirant to perform comprehensive modeling to assess the impact of emissions from the facility on the area in the immediate vicinity of the facility.

3. At or about the time of the public hearing, certain residents of Alexandria, Virginia, provided the Department with a document entitled "Screening-Level Modeling Analysis of the Potomac River Power Plant Located in Alexandria, Virginia" prepared by Sullivan Environmental Consulting, Inc., dated March 29, 2004 (the Sullivan Screening). The Sullivan Screening was commissioned by, among others, certain residents of Marina Towers for the purpose of assessing whether emissions from the facility may cause exceedances of certain NAAQS at Marina Towers as a result of "downwash." The Sullivan Screening concluded that, "on average, meteorological conditions associated with plume impaction conditions on the Marina Towers condominium were screened to occur as often as 1,200 hours per year."

4. Although the Sullivan Screening does not establish conclusively that emissions from the facility result in exceedances of the NAAQS at Marina Towers, the Department believes that the results of the Sullivan Study warrant that further comprehensive analysis be conducted in accordance with DEQ and EPA approved modeling procedures in order to more fully determine the effect of emissions from the facility on the ambient air quality at Marina Towers and in the area in the immediate vicinity of the facility.

SECTION D: Agreement and Order

Accordingly, the Board, by virtue of the authority granted it in Va. Code §§ 10.1-1307 D and 10.1-1307.1 orders Mirant, and Mirant agrees, to perform the actions described in this section of the Order:

1. Mirant shall perform a refined modeling analysis to assess the effect of "downwash" from the facility on ambient concentrations of SO_2, NO_2, CO, and PM_{10} for comparison to the applicable NAAQS in the area immediately surrounding the facility. In addition, Mirant shall perform a refined modeling analysis to assess the effect of "downwash" from the facility on ambient concentrations of mercury for comparison to the applicable Standards of Performance for Toxic Pollutants set forth in 9 VAC 5-60-200, *et seq.*, in the area immediately surrounding the facility.

2. The protocol and methodology for the modeling analysis shall be in accordance with EPA and DEQ methods and shall be approved by DEQ prior to commencement of the modeling. Mirant shall submit a proposed modeling protocol and methodology to Kenneth L. McBee, DEQ Air Modeling Program Coordinator, 629 E. Main St., Richmond VA 23219, within twenty-one (21) days of the effective date of this Order.

3.   Mirant shall perform the modeling analysis immediately upon receiving written approval of the modeling protocol and methodology from DEQ. Mirant shall submit the results of the modeling analysis to Mr. McBee and the Director of the Department's Northern Virginia Regional Office no later than sixty (60) days after Mirant receives written approval of the modeling protocol and methodology.

4.   In the event the modeling analysis indicates that emissions from the facility may cause exceedances of the NAAQS for SO_2, NO_2, CO, or PM_{10}, or exceedances of the Standards of Performance for Toxic Pollutants for mercury in the area immediately surrounding the facility, DEQ shall require Mirant to submit to DEQ, within ninety (90) days of submitting the modeling analysis, a plan and schedule to eliminate and prevent such exceedances on a timely basis. Upon review and approval of that plan and schedule by DEQ, the approved plan and schedule shall be incorporated by reference into this Order.

5.   Mirant agrees to waive any objections it may otherwise be entitled to assert under law should DEQ seek to incorporate the approved plan and schedule into the facility's permit.

Section E: Administrative Provisions

1.   The Board may modify, rewrite, or amend this Order with the consent of Mirant for good cause shown by Mirant, or after a proceeding as required by the Administrative Process Act for a case decision.

2.   This Order addresses only those issues specifically identified herein. This Order shall not preclude the Board or the Director from taking any action authorized by law, including, but not limited to seeking subsequent remediation of the facility as may be authorized by law and/or taking subsequent action to enforce the terms of this Order. This order shall not preclude appropriate enforcement actions by other federal, state or local regulatory agencies for matters not addressed herein.

3.   Solely for the purposes of the execution of this Order, for compliance with this Order, and for subsequent actions with respect to this Order, Mirant consents to the jurisdictional allegations and conclusions of law contained herein.

4.   Mirant declares it has received fair and due process under the Administrative Process Act, Va. Code §§ 2.2-4000 *et seq.*, and the Air Pollution Control Law and it waives the right to any hearing or other administrative proceeding authorized or required by law or regulation, and to any judicial review of any issue of fact or law contained herein. Nothing herein shall be construed as a waiver of the right to any administrative proceeding for, or to judicial review of, any action taken by the Board to modify, rewrite, amend, or enforce this Order, or any subsequent deliverables required to be submitted by Mirant and approved by the Department, without the consent of Mirant.

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5.	Failure by Mirant to comply with any of the terms of this Order shall constitute a violation of an order of the Board. Nothing herein shall waive the initiation of appropriate enforcement actions or the issuance of additional orders as appropriate by the Board or Director as a result of such violations.

6.	If any provision of this Order is found to be unenforceable for any reason, the remainder of the Order shall remain in full force and effect.

7.	Mirant shall be responsible for failure to comply with any of the terms and conditions of this Order unless compliance is made impossible by earthquake, flood, other acts of God, war, strike, or other such circumstance. Mirant must show that such circumstances resulting in noncompliance were beyond its control and not due to a lack of good faith or diligence on its part. Mirant shall notify the Director, NVRO, in writing when circumstances are anticipated to occur, are occurring, or have occurred that may delay compliance or cause noncompliance with any requirement of this Order. Such notice shall set forth:

    a.	The reasons for the delay or noncompliance;

    b.	The projected duration of any such delay or noncompliance;

    c.	The measures taken and to be taken to prevent or minimize such delay or noncompliance; and

The timetable by which such measures will be implemented and the date full compliance will be achieved.

Failure to so notify the Director, NVRO, in writing within 24 hours of learning of any condition above, which Mirant intends to assert will result in the impossibility of compliance, shall constitute a waiver of any claim of inability to comply with a requirement of this Order.

8.	This Order is binding on the parties hereto, parent corporations, or their successors in interest, designees, assigns.

9.	This Order shall become effective upon execution by both the Director of the Department of Environmental Quality or his designee and Mirant.

10.	This Order shall continue in effect until:

    a.	Mirant petitions the Director or his designee to terminate the order after it has completed all of the requirements of the Order and the Director or his designee approves the termination of the Order; or

    b.	The Director or Board terminates the Order in his or its sole discretion upon 30 days written notice to Mirant.

Termination of this Order, or of any obligation imposed in this Order, shall not operate to relieve Mirant from its obligation to comply with any statute, regulation, permit condition, other order, certificate, certification, standard, or requirement otherwise applicable.

AND IT IS ORDERED this 23rd day of _September_ 2004.

By: _____

Robert G. Burnley, Director
Department of Environmental Quality

Mirant Potomac River, LLC, voluntarily agrees to the issuance of this Order.

MIRANT POTOMAC RIVER, LLC

by: _____

Lisa D. Johnson, President

The foregoing instrument was signed and acknowledged before me on this _17th_ day of _County_ _Sept._ 2004 by _Lisa D. Johnson_ of Mirant Potomac River, LLC, in the City of _Prince George_, Commonwealth of Virginia.

_____
Notary Public

My Commission expires: _06/07/05_

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B

APPENDIX B

GEP BUILDING DIMENSIONS PRODUCED BY LAKES ENVIRONMENTAL BPIP SOFTWARE

MIRANT POTOMAC RIVER, LLC

BPIP Output (meters)

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SO BUILDHGT STACK1     35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK1     35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK1     35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK1     35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK1     35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK1     35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDWID STACK1     64.81    41.88    56.63    69.75    80.50    89.00
SO BUILDWID STACK1     94.75    97.50    97.50    95.00    97.50    97.50
SO BUILDWID STACK1     94.50    88.50    79.75    68.88    55.75    40.91
SO BUILDWID STACK1     64.81    41.88    56.63    69.75    80.75    89.00
SO BUILDWID STACK1     94.75    97.75    97.50    95.00    97.50    97.50
SO BUILDWID STACK1     94.50    88.50    79.75    68.88    55.75    40.91
SO BUILDLEN STACK1    157.50    97.75    97.50    94.50    88.50    80.00
SO BUILDLEN STACK1     68.88    55.75    40.91    25.94    42.00    56.63
SO BUILDLEN STACK1     69.50    80.75    89.00    94.75    97.50    97.50
SO BUILDLEN STACK1    157.50    97.75    97.50    94.50    88.50    80.00
SO BUILDLEN STACK1     68.88    55.63    40.91    25.94    41.88    56.75
SO BUILDLEN STACK1     69.75    80.50    89.00    94.75    97.50    97.50
SO XBADJ    STACK1    -33.00   -10.00    -8.00    -5.50    -3.25    -0.75
SO XBADJ    STACK1      1.75     4.25     6.63     8.25    -6.38   -20.75
SO XBADJ    STACK1    -34.25   -47.00   -58.50   -68.00   -75.50   -80.50
SO XBADJ    STACK1   -124.50   -87.50   -89.75   -88.50   -85.25   -79.25
SO XBADJ    STACK1    -70.63   -60.00   -47.53   -34.19   -35.63   -36.13
SO XBADJ    STACK1    -35.25   -33.50   -30.75   -26.75   -22.25   -17.00
SO YBADJ    STACK1     23.39   -14.63    -7.61    -0.49     6.91    13.76
SO YBADJ    STACK1     20.41    26.53    31.70    35.81    38.88    40.69
SO YBADJ    STACK1     41.62    40.87    39.27    36.25    32.15    27.07
SO YBADJ    STACK1    -23.43    14.67     7.73     0.33    -6.84   -13.87
SO YBADJ    STACK1    -20.51   -26.54   -31.59   -35.96   -38.81   -40.90
SO YBADJ    STACK1    -41.61   -41.05   -39.23   -36.24   -32.10   -27.07


SO BUILDHGT STACK2     35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK2     35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK2     35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK2     35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK2     35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK2     35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDWID STACK2     64.81    41.88    56.63    69.75    80.50    89.00
SO BUILDWID STACK2     94.75    97.50    97.50    95.00    97.50    97.50
SO BUILDWID STACK2     94.50    88.50    79.75    68.88    55.75    40.91
SO BUILDWID STACK2     64.81    41.88    56.63    69.75    80.75    89.00
SO BUILDWID STACK2     94.75    97.75    97.50    95.00    97.50    97.50
SO BUILDWID STACK2     94.50    88.50    79.75    68.88    55.75    40.91
SO BUILDLEN STACK2    157.50    97.75    97.50    94.50    88.50    80.00
SO BUILDLEN STACK2     68.88    55.75    40.91    25.94    42.00    56.63
SO BUILDLEN STACK2     69.50    80.75    89.00    94.75    97.50    97.50
SO BUILDLEN STACK2    157.50    97.75    97.50    94.50    88.50    80.00
SO BUILDLEN STACK2     68.88    55.63    40.91    25.94    41.88    56.75
SO BUILDLEN STACK2     69.75    80.50    89.00    94.75    97.50    97.50
SO XBADJ    STACK2    -57.00   -33.50   -30.25   -26.00   -21.25   -15.75
SO XBADJ    STACK2     -9.75    -3.63     2.88     8.63    -1.88   -12.25
SO XBADJ    STACK2    -22.00   -31.50   -40.00   -47.25   -53.00   -57.00
SO XBADJ    STACK2   -100.50   -64.25   -67.50   -68.25   -67.25   -64.25
SO XBADJ    STACK2    -59.13   -52.25   -43.78   -34.59   -40.13   -44.63
SO XBADJ    STACK2    -47.50   -49.25   -49.25   -47.50   -44.50   -40.50
SO YBADJ    STACK2     23.01   -19.15   -16.12   -12.73    -8.68    -4.71
SO YBADJ    STACK2     -0.39     4.04     8.20    12.01    15.51    18.46
SO YBADJ    STACK2     21.21    22.89    24.28    24.69    24.38    23.32
SO YBADJ    STACK2    -23.04    19.19    16.23    12.56     8.75     4.61
SO YBADJ    STACK2      0.29    -4.05    -8.09   -12.17   -15.45   -18.68
SO YBADJ    STACK2    -21.19   -23.08   -24.23   -24.68   -24.33   -23.32
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SO BUILDHGT STACK3      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK3      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK3      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK3      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK3      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK3      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDWID STACK3      64.81    41.88    56.63    69.75    80.50    89.00
SO BUILDWID STACK3      94.75    97.50    97.50    95.00    97.50    97.50
SO BUILDWID STACK3      94.50    88.50    79.75    68.88    55.75    40.91
SO BUILDWID STACK3      64.81    41.88    56.63    69.75    80.75    89.00
SO BUILDWID STACK3      94.75    97.75    97.50    95.00    97.50    97.50
SO BUILDWID STACK3      94.50    88.50    79.75    68.88    55.75    40.91
SO BUILDLEN STACK3     157.50    97.75    97.50    94.50    88.50    80.00
SO BUILDLEN STACK3      68.88    55.75    40.91    25.94    42.00    56.63
SO BUILDLEN STACK3      69.50    80.75    89.00    94.75    97.50    97.50
SO BUILDLEN STACK3     157.50    97.75    97.50    94.50    88.50    80.00
SO BUILDLEN STACK3      68.88    55.63    40.91    25.94    41.88    56.75
SO BUILDLEN STACK3      69.75    80.50    89.00    94.75    97.50    97.50
SO XBADJ    STACK3     -81.00   -56.75   -52.50   -46.50   -39.25   -31.00
SO XBADJ    STACK3     -21.38   -11.38    -0.91     8.97     2.63    -3.75
SO XBADJ    STACK3     -10.00   -16.00   -21.50   -26.25   -30.50   -33.50
SO XBADJ    STACK3     -76.50   -40.75   -45.25   -47.75   -49.25   -49.25
SO XBADJ    STACK3     -47.50   -44.38   -40.00   -34.94   -44.63   -53.13
SO XBADJ    STACK3     -59.75   -64.75   -67.75   -68.25   -67.00   -64.00
SO YBADJ    STACK3      22.65   -23.63   -24.59   -24.94   -24.25   -23.17
SO YBADJ    STACK3     -21.18   -18.45   -15.30   -11.78    -7.87    -3.78
SO YBADJ    STACK3       0.77     4.89     9.25    13.10    16.58    19.54
SO YBADJ    STACK3     -22.69    23.67    24.71    24.77    24.32    23.07
SO YBADJ    STACK3      21.08    18.44    15.41    11.63     7.93     3.56
SO YBADJ    STACK3      -0.76    -5.07    -9.21   -13.09   -16.53   -19.54


SO BUILDHGT STACK4      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK4      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK4      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK4      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK4      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK4      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDWID STACK4      64.81    41.88    56.63    69.75    80.50    89.00
SO BUILDWID STACK4      94.75    97.50    97.50    95.00    97.50    97.50
SO BUILDWID STACK4      94.50    88.50    79.75    68.88    55.75    40.91
SO BUILDWID STACK4      64.81    41.88    56.63    69.75    80.75    89.00
SO BUILDWID STACK4      94.75    97.75    97.50    95.00    97.50    97.50
SO BUILDWID STACK4      94.50    88.50    79.75    68.88    55.75    40.91
SO BUILDLEN STACK4     157.50    97.75    97.50    94.50    88.50    80.00
SO BUILDLEN STACK4      68.88    55.75    40.91    25.94    42.00    56.63
SO BUILDLEN STACK4      69.50    80.75    89.00    94.75    97.50    97.50
SO BUILDLEN STACK4     157.50    97.75    97.50    94.50    88.50    80.00
SO BUILDLEN STACK4      68.88    55.63    40.91    25.94    41.88    56.75
SO BUILDLEN STACK4      69.75    80.50    89.00    94.75    97.50    97.50
SO XBADJ    STACK4    -104.50   -80.25   -74.75   -66.75   -57.25   -45.75
SO XBADJ    STACK4     -32.75   -19.00    -4.50     9.53     7.25     4.88
SO XBADJ    STACK4       2.50    -0.25    -3.00    -5.50    -8.00   -10.00
SO XBADJ    STACK4     -53.00   -17.50   -23.00   -27.50   -31.50   -34.25
SO XBADJ    STACK4     -36.13   -36.75   -36.41   -35.50   -49.25   -61.75
SO XBADJ    STACK4     -72.00   -80.50   -86.25   -89.00   -89.75   -87.50
SO YBADJ    STACK4      22.11   -28.29   -33.23   -37.29   -39.95   -41.73
SO YBADJ    STACK4     -42.04   -40.97   -38.80   -35.55   -31.18   -25.93
SO YBADJ    STACK4     -19.54   -12.97    -5.61     1.68     8.96    15.95
SO YBADJ    STACK4     -22.14    28.33    33.34    37.12    40.01    41.62
SO YBADJ    STACK4      41.94    40.95    38.91    35.40    31.24    25.71
SO YBADJ    STACK4      19.55    12.78     5.66    -1.67    -8.91   -15.94
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SO BUILDHGT STACK5      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK5      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK5      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK5      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK5      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDHGT STACK5      35.29    35.29    35.29    35.29    35.29    35.29
SO BUILDWID STACK5      64.81    41.88    56.63    69.75    80.50    89.00
SO BUILDWID STACK5      94.75    97.50    97.50    95.00    97.50    97.50
SO BUILDWID STACK5      94.50    88.50    79.75    68.88    55.75    40.91
SO BUILDWID STACK5      64.81    41.88    56.63    69.75    80.75    89.00
SO BUILDWID STACK5      94.75    97.75    97.50    95.00    97.50    97.50
SO BUILDWID STACK5      94.50    88.50    79.75    68.88    55.75    40.91
SO BUILDLEN STACK5     157.50    97.75    97.50    94.50    88.50    80.00
SO BUILDLEN STACK5      68.88    55.75    40.91    25.94    42.00    56.63
SO BUILDLEN STACK5      69.50    80.75    89.00    94.75    97.50    97.50
SO BUILDLEN STACK5     157.50    97.75    97.50    94.50    88.50    80.00
SO BUILDLEN STACK5      68.88    55.63    40.91    25.94    41.88    56.75
SO BUILDLEN STACK5      69.75    80.50    89.00    94.75    97.50    97.50
SO XBADJ    STACK5    -128.50  -103.75   -97.25   -87.50   -75.50   -61.25
SO XBADJ    STACK5     -44.88   -27.25    -8.78     9.38    11.25    12.88
SO XBADJ    STACK5      14.25    15.00    15.25    15.00    14.50    13.50
SO XBADJ    STACK5     -29.00     6.00    -0.50    -6.75   -13.00   -19.00
SO XBADJ    STACK5     -24.00   -28.50   -32.13   -35.34   -53.38   -69.75
SO XBADJ    STACK5     -83.75   -95.75  -104.50  -109.75  -112.00  -111.00
SO YBADJ    STACK5      22.24   -32.31   -41.27   -49.11   -55.20   -59.94
SO YBADJ    STACK5     -62.66   -63.37   -62.30   -59.44   -54.73   -48.42
SO YBADJ    STACK5     -40.29   -31.35   -21.07   -10.38     0.66    11.67
SO YBADJ    STACK5     -22.28    32.35    41.39    48.95    55.26    59.83
SO YBADJ    STACK5      62.55    63.35    62.41    59.29    54.79    48.20
SO YBADJ    STACK5      40.31    31.17    21.11    10.39    -0.61   -11.66
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APPENDIX C

AERMOD RECEPTORS

AERMOD Receptors

Spaced 50 meters along the fence line and 100 meters extending to 1 km
Datum: NAD27, UTM18

UTM-X (m)	UTM-Y (m)	Z (m)	TYPE	UTM-X (m)	UTM-Y (m)	Z (m)	TYPE
322869	4298600	5	fence	323261	4297842	2	polar
322874	4298588	5	fence	323311	4297755	2	polar
322874	4298586	5	fence	322982	4298151	3	polar
322880	4298571	9	fence	323016	4298057	3	polar
322878	4298570	9	fence	323051	4297963	3	polar
322883	4298559	9	fence	323085	4297869	3	polar
322898	4298539	8	fence	323119	4297775	2	polar
322926	4298422	8	fence	323153	4297681	2	polar
322942	4298347	9	fence	322881	4298227	9	polar
322959	4298264	6	fence	322898	4298129	6	polar
322965	4298228	6	fence	322915	4298030	6	polar
322951	4298229	6	fence	322933	4297932	6	polar
322939	4298231	9	fence	322950	4297833	4	polar
322924	4298235	9	fence	322967	4297735	3	polar
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